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## Search strategy

Set#	Searched for	Databases	Results
S2	"Brownian motion" AND (financial system) AND ("price range") AND pd (<20001213)	Business Dateline, Hoover's Company Profiles, ProQuest Central, ProQuest Dissertations & Theses (PQDT), ProQuest Historical Newspapers: Chicago Tribune (1849-1989), ProQuest Historical Newspapers: Los Angeles Times (1881-1989), ProQuest Historical Newspapers: The Christian Science Monitor (1908-1999), ProQuest Historical Newspapers: The New York Times (1851-2009), ProQuest Historical Newspapers: The Wall Street Journal (1889-1995), ProQuest Historical Newspapers: The Washington Post (1877-1996), ProQuest Illustrata: Natural Sciences, ProQuest Illustrata: Technology	9
S1	"Brownian motion" AND (financial system) AND (price range) AND pd (<20001213)	Business Dateline, Hoover's Company Profiles, ProQuest Central, ProQuest Dissertations & Theses (PQDT), ProQuest Historical Newspapers: Chicago Tribune (1849-1989), ProQuest Historical Newspapers: Los Angeles Times (1881-1989), ProQuest Historical Newspapers: The Christian Science Monitor (1908-1999), ProQuest Historical Newspapers: The New York Times (1851-2009), ProQuest Historical Newspapers: The Wall Street Journal (1889-1995), ProQuest Historical Newspapers: The Washington Post (1877-1996), ProQuest Illustrata: Natural Sciences, ProQuest Illustrata: Technology	165

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## Valuing flexibility in offshore petroleum projects

Lund, Morten W. **Annals of Operations Research** 99. 1 (Dec 2000): 325-349.

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[http://zj5lm7ny2a.search.serialsolutions.com/?ctx\\_ver=Z39.88-2004&ctx\\_enc=info:ofi/enc:UTF-8&rlt\\_id=info:sid/ProQ%3Aabiglobal&rlt\\_val\\_fmt=info:ofi/fmt:kev:mtx:journal&rlt\\_genre=article&rlt\\_title=Annals+of+Op&rlt\\_auth=2C+Morten+W&rlt\\_authast=Lund&rlt\\_authfirst=Morten&rlt\\_date=2000-12-01&rlt\\_volume=99&rlt\\_issue=1&rlt\\_spage=325&rlt\\_isbn=&rlt\\_btitle=&rlt\\_title=Annals+of+Operat](http://zj5lm7ny2a.search.serialsolutions.com/?ctx_ver=Z39.88-2004&ctx_enc=info:ofi/enc:UTF-8&rlt_id=info:sid/ProQ%3Aabiglobal&rlt_val_fmt=info:ofi/fmt:kev:mtx:journal&rlt_genre=article&rlt_title=Annals+of+Op&rlt_auth=2C+Morten+W&rlt_authast=Lund&rlt_authfirst=Morten&rlt_date=2000-12-01&rlt_volume=99&rlt_issue=1&rlt_spage=325&rlt_isbn=&rlt_btitle=&rlt_title=Annals+of+Operat)

### Abstract (summary)

The average size of discovered petroleum reserves on the Norwegian continental shelf has declined steadily over the last years. As a consequence, the fields have become economically more marginal, and new and flexible development strategies are required. This paper describes a stochastic dynamic programming model for project evaluation under uncertainty, where emphasis is put on flexibility and its value. Both market risk and reservoir uncertainty are handled by the model, as well as different flexibility types. The complexity of the problem is a challenge and calls for simple descriptions of the main variables in order to obtain a manageable model size. Results from a case study reveal significant value of flexibility, and clearly illustrate the shortcoming of today's common evaluation methods. Particularly capacity flexibility should not be neglected in future development projects where uncertainty surrounding the reservoir properties is substantial. [PUBLICATION ABSTRACT]

### Indexing (details)

<b>Subject</b>	Petroleum industry; Offshore drilling; Studies; Stochastic models; Dynamic programming
<b>Location</b>	Norway
<b>Classification</b>	9130: Experimental/theoretical, 5240: Software & systems, 8510: Petroleum industry, 9175: Western Europe
<b>Title</b>	Valuing flexibility in offshore petroleum projects

Author	Lund, Morten W
Publication title	Annals of Operations Research
Volume	99
Issue	1
Pages	325-349
Publication year	2000
Publication date	Dec 2000
Year	2000
Publisher	Springer Science & Business Media
Place of publication	Basel
Country of publication	Netherlands
Journal subject	Computers
ISSN	02545330
Source type	Scholarly Journals
Language of publication	English
Document type	Feature
ProQuest document ID	214510028
Document URL	<a href="http://search.proquest.com/docview/214510028?accountid=14753">http://search.proquest.com/docview/214510028?accountid=14753</a>
Copyright	Copyright Kluwer Academic Publishers Dec 2000
Last updated	2010-06-08
Database	ProQuest Central

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document 2 of 9

## The relevance of the price of risk in affine term structure models

Duarte, Jefferson. The University of Chicago, 2000. 9990513.

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[http://zj5lm7ny2a.search.serialsolutions.com/?ctx\\_ver=Z39.88-2004&ctx\\_enc=info:ofi/enc:UTF-8&rir\\_id=info:eid/ABI%2FINFORM+Global&rft\\_val\\_fmt=info:ofi/fmt:kev:mtx:dissertation&rft.genre=dissertations+%26+theses&rft.jtitle=&rft.atitle=&rft.au=Duarte%2C+Jefferson&rft.aulast=Duarte&rft.aufirst=Jefferson&rft.date=2000-01-01&rft.volume=&rft.issue=&rft.spage=&rft.isbn=9780599973381&rft.buitle=&rft.title=The+relev](http://zj5lm7ny2a.search.serialsolutions.com/?ctx_ver=Z39.88-2004&ctx_enc=info:ofi/enc:UTF-8&rir_id=info:eid/ABI%2FINFORM+Global&rft_val_fmt=info:ofi/fmt:kev:mtx:dissertation&rft.genre=dissertations+%26+theses&rft.jtitle=&rft.atitle=&rft.au=Duarte%2C+Jefferson&rft.aulast=Duarte&rft.aufirst=Jefferson&rft.date=2000-01-01&rft.volume=&rft.issue=&rft.spage=&rft.isbn=9780599973381&rft.buitle=&rft.title=The+relev)

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### Abstract (summary)

A term structure model is proposed. The presented model is an affine model with a more flexible parametrization for the price of risk. An empirical examination of the proposed model leads to four major conclusions. First, richer parametrizations for the price of risk allow affine models to match the time variability of the term premium without imposing any cost in producing time-variation of volatilities of interest rates. Second, the parametrization of the price of risk can significantly affect the price of fixed income derivatives if the parameters used in pricing are estimated from the models' time-series restrictions. Third, the parametrization of the price of risk substantially affects the model performance in forecasting future term structure movements. Finally, the usual result in empirical studies of affine models, indicating that some of the state variables underlying the term structure are extremely persistent, may have been partially caused by the lack of flexibility in the usual parametrization of the price of risk.

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### Indexing (details)

<b>Subject</b>	Finance;
	Risk;
	Mathematical models;
	Studies
<b>Classification</b>	0508: Finance
<b>Identifier / keyword</b>	Social sciences, Price of risk, Affine term structure, Term structure, Interest rates
<b>Title</b>	The relevance of the price of risk in affine term structure models

<b>Author</b>	Duarte, Jefferson
<b>Pages</b>	69 p.
<b>Number of pages</b>	69
<b>Publication year</b>	2000
<b>Degree date</b>	2000
<b>School code</b>	0330
<b>Source</b>	DAI-A 61/10, p. 4113, Apr 2001
<b>ISBN</b>	9780599973381, 0599973382
<b>Advisor</b>	Constantinides, George M
<b>University/ institution</b>	The University of Chicago
<b>University location</b>	United States -- Illinois
<b>Degree</b>	Ph.D.
<b>Source type</b>	Dissertations & Theses
<b>Language</b>	English
<b>Document type</b>	Dissertation/Thesis
<b>Dissertation/ thesis number</b>	9990513
<b>ProQuest document ID</b>	304645571
<b>Document URL</b>	<a href="http://search.proquest.com/docview/304645571?accountid=14753">http://search.proquest.com/docview/304645571?accountid=14753</a>
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<b>Database</b>	2 databases View list


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## Changes in trading activity following stock splits and their effect on volatility and adverse-information component of the bid-ask spread

Desai, Anand S; Nimalendran, M; Venkataraman, S.

**The Journal of Financial Research** 21. 2 (Summer 1998): 159-183.

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[http://ZJ5LM7NY2A.search.serialssolutions.com/directLink?&title=Changes+in+trading+activity+following+stock+splits+and+their+effect+on+volatility+-information+component+of+the+bid-ask+spread&author=Desai%2C+Anand+S%3BNimalendran%2C+M%3BVenkataraman%2C+S&issn=02702592&title=The+Journal+of+Financial+Research&volume=21&issue=2&date=07-01&epage=159&id=doi:&sid=ProQ\\_ss&genre=article](http://ZJ5LM7NY2A.search.serialssolutions.com/directLink?&title=Changes+in+trading+activity+following+stock+splits+and+their+effect+on+volatility+-information+component+of+the+bid-ask+spread&author=Desai%2C+Anand+S%3BNimalendran%2C+M%3BVenkataraman%2C+S&issn=02702592&title=The+Journal+of+Financial+Research&volume=21&issue=2&date=07-01&epage=159&id=doi:&sid=ProQ_ss&genre=article)

### Abstract (summary)

A study examines changes in trading activity around stock splits and their effect on volatility and the adverse-information component of the bid-ask spread. Even after controlling for microstructure biases, the study finds a significant increase in volatility after the split. Changes in total volatility and in its permanent component are positively related to changes in the number of trades. This suggests that both informed and noise traders contribute to changes in trading activity. Further, while the adverse-information component of the spread increases unconditionally after the split, the change is negatively related to the change in trading activity. The results suggest that a crucial determinant of liquidity changes after a stock split is the success of the split in attracting new trades in the security.

### Indexing (details)

<b>Subject</b>	Studies;
	Econometrics;
	Stock splits;
	Volatility;
	Securities trading;
	Asked price;
	Spread
<b>Classification</b>	9130: Experimental/theoretical treatment,
	1130: Economic theory,
	3400: Investment analysis

<b>Title</b>	Changes in trading activity following stock splits and their effect on volatility and adverse-information component of the bid-ask spread
<b>Author</b>	Desai, Anand S; Nimalendran, M; Venkataraman, S
<b>Publication title</b>	The Journal of Financial Research
<b>Volume</b>	21
<b>Issue</b>	2
<b>Pages</b>	159-183
<b>Number of pages</b>	25
<b>Publication year</b>	1998
<b>Publication date</b>	Summer 1998
<b>Year</b>	1998
<b>Publisher</b>	Blackwell Publishing Ltd.
<b>Place of publication</b>	Columbia
<b>Country of publication</b>	United Kingdom
<b>Journal subject</b>	Business And Economics, Business And Economics--Banking And Finance
<b>ISSN</b>	02702592
<b>Source type</b>	Scholarly Journals
<b>Language of publication</b>	English
<b>Document type</b>	PERIODICAL
<b>Accession number</b>	01669816, 00678515
<b>ProQuest document ID</b>	215726186
<b>Document URL</b>	<a href="http://search.proquest.com/docview/215726186?accountid=14753">http://search.proquest.com/docview/215726186?accountid=14753</a>
<b>Copyright</b>	Copyright Virginia Polytechnic Institute and State University Summer 1998
<b>Last updated</b>	2012-02-21
<b>Database</b>	ProQuest Central

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## Estimating irregular pricing effects: A stochastic spline regression approach

Kalyanam, Kirthi; Shively, Thomas S.

**JMR, Journal of Marketing Research** 35. 1 (Feb 1998): 16-29.

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### Abstract (summary)

A stochastic spline regression approach is used in the framework of a hierarchical Bayes model that permits the estimation of irregular pricing effects and applies the approach to data sets from several product categories. A simulation indicated the stochastic spline approach is flexible enough to accommodate irregular response functions. Empirical results show that there are irregularities in own-price response for most of the brands examined, and that there are important profit implications of these regular response functions in pricing decisions.

### Indexing (details)

Subject	Bayesian analysis;
	Market research;
	Studies;
	Pricing policies;
	Decision theory;
	Mathematical models;
	Statistical analysis;
	Stochastic models;
	Regression analysis;
	Simulation
Location	US
Classification	



9190: US,  
 2600: Management science/operations research,  
 9130: Experimental/theoretical treatment,  
 7100: Market research


<b>Title</b>	Estimating irregular pricing effects: A stochastic spline regression approach
<b>Author</b>	Kalyanam, Kirthi; Shively, Thomas S
<b>Publication title</b>	JMR, Journal of Marketing Research
<b>Volume</b>	35
<b>Issue</b>	1
<b>Pages</b>	16-29
<b>Number of pages</b>	14
<b>Publication year</b>	1998
<b>Publication date</b>	Feb 1998
<b>Year</b>	1998
<b>Publisher</b>	American Marketing Association
<b>Place of publication</b>	Chicago
<b>Country of publication</b>	United States
<b>Journal subject</b>	Business And Economics--Marketing And Purchasing
<b>ISSN</b>	00222437
<b>CODEN</b>	JMKRAE
<b>Source type</b>	Scholarly Journals
<b>Language of publication</b>	English
<b>Document type</b>	Market Research
<b>Accession number</b>	01576149
<b>ProQuest document ID</b>	235217614
<b>Document URL</b>	<a href="http://search.proquest.com/docview/235217614?accountid=14753">http://search.proquest.com/docview/235217614?accountid=14753</a>
<b>Copyright</b>	Copyright American Marketing Association Feb 1998
<b>Last updated</b>	2011-10-13
<b>Database</b>	ProQuest Central

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## Equilibrium asset price ranges

Bergman, Yaacov Z. **International Review of Financial Analysis** 5. 3 (1996): 161-169.

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[http://ZJ5LM7NY2A.search.serialssolutions.com/directLink?&afitle=Equilibrium+asset+price+ranges&author=Bergman%2C+Yaacov+Z&issn=10575219&title=International+Review+of+Financial+Analysis&volume=5&-09-01&spage=161&id=doi&sid=ProQ\\_ss&genre=article](http://ZJ5LM7NY2A.search.serialssolutions.com/directLink?&afitle=Equilibrium+asset+price+ranges&author=Bergman%2C+Yaacov+Z&issn=10575219&title=International+Review+of+Financial+Analysis&volume=5&-09-01&spage=161&id=doi&sid=ProQ_ss&genre=article)

### Abstract (summary)

A paper shows that equilibrium conditions impose restrictions on ranges of price processes. Specifically, it shows that the upper and the lower barriers on the price of a risky asset at any given time are themselves bounded by the discounted upper and lower barriers, respectively, on the price at any later time. It is also shown that, as a result, in the presence of a positive riskless yield, a constant finite barrier on the price of a risky asset is inconsistent with equilibrium, with an analogous result for the lower barrier. It is shown, on the other hand, that if there is a finite upper barrier on prices, then the barrier must grow at least as fast as the interest rate. It is stressed that these restrictions must be obeyed when modeling asset prices.

### Indexing (details)

<b>Subject</b>	Studies;
	Equilibrium;
	Price variance;
	Economic models;
	Economic theory;
<b>Classification</b>	Securities markets
	9130: Experimental/theoretical treatment,
	1130: Economic theory,
	3400: Investment analysis
<b>Title</b>	Equilibrium asset price ranges
<b>Author</b>	Bergman, Yaacov Z.
<b>Publication title</b>	International Review of Financial Analysis
<b>Volume</b>	5
<b>Issue</b>	3

Pages	161-169
Number of pages	9
Publication year	1996
Publication date	1996
Year	1996
Publisher	Elsevier Science Ltd.
Place of publication	Greenwich
Country of publication	United Kingdom
Journal subject	Business And Economics--Banking And Finance
ISSN	10575219
Source type	Scholarly Journals
Language of publication	English
Document type	PERIODICAL
Accession number	01576008
ProQuest document ID	200172291
Document URL	<a href="http://search.proquest.com/docview/200172291?accountid=14753">http://search.proquest.com/docview/200172291?accountid=14753</a>
Copyright	Copyright JAI Press Inc. 1996
Last updated	2010-06-06
Database	ProQuest Central

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# Dynamic Programming and Pricing of Contingent Claims in an Incomplete Market

El Karoui, Nicole; Quenez, Marie-Claire.

**SIAM Journal on Control and Optimization** 33. 1 (Jan 1995): 38.

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## Abstract (summary)

The problem of pricing contingent claims or options from the price dynamics of certain securities is well understood in the context of a complete financial market. This paper studies the same problem in an incomplete market. When the market is incomplete, prices cannot be derived from the absence of arbitrage, since it is not possible to replicate the payoff of a given contingent claim by a controlled portfolio of the basic securities. In this situation, there is a price range for the actual market price of the contingent claim. The maximum and minimum prices are studied using stochastic control methods.

The main result of this work is the determination that the maximum price is the smallest price that allows the seller to hedge completely by a controlled portfolio of the basic securities. A similar result is obtained for the minimum price (which corresponds to the purchase price).

## Indexing (details)

Title	Dynamic Programming and Pricing of Contingent Claims in an Incomplete Market
Author	El Karoui, Nicole; Quenez, Marie-Claire
Publication title	SIAM Journal on Control and Optimization
Volume	33
Issue	1
Pages	38
Publication year	1995

<b>Publication date</b>	Jan 1995
<b>Year</b>	1995
<b>Publisher</b>	Society for Industrial and Applied Mathematics
<b>Place of publication</b>	Philadelphia
<b>Country of publication</b>	United States
<b>Journal subject</b>	Mathematics
<b>ISSN</b>	03630129
<b>Source type</b>	Scholarly Journals
<b>Language of publication</b>	English
<b>Document type</b>	PERIODICAL
<b>DOI</b>	<a href="http://dx.doi.org/10.1137/S0363012992232579">http://dx.doi.org/10.1137/S0363012992232579</a>
<b>ProQuest document ID</b>	925833117
<b>Document URL</b>	<a href="http://search.proquest.com/docview/925833117?accountid=14753">http://search.proquest.com/docview/925833117?accountid=14753</a>
<b>Copyright</b>	[Copyright] © 1995 © Society for Industrial and Applied Mathematics
<b>Last updated</b>	2012-03-03
<b>Database</b>	ProQuest Central

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## Futures Trading and Cash Market Volatility: Stock Index and Interest Rate Futures: I. INTRODUCTION

Edwards, Franklin R. **The Journal of Futures Markets (1986-1998)** 8. 4 (Aug 1988): 421.

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[http://zj5lm7ny2a.search.serialsolutions.com/?ctx\\_ver=Z39-88-2004&ctx\\_enc=info:ofi/enc:UTF-8&rft\\_id=info:sid/ProQ%3Aabiglobal&rft\\_val\\_fmt=info:ofi/fmt:kev:mtx:journal&rft.genre=unknown&rft.jtitle=The+Journal+of+Futures+Trading+and+Cash+Market+Volatility%3A+Stock+Index+and+Interest+Rate+Futures%3A+I.+INTRODUCTION&rft.au=Edwards%2C+Franklin+R&rft.aualast=Edwards&rft.aufirst=Franklin&rft.date=1988-08-01&rft.volume=8&rft.issue=4&rft.spage=421&rft.isbn=&rft.btitle=&rft.title=The+Journal+of+Futures+Trading+and+Cash+Market+Volatility%3A+Stock+Index+and+Interest+Rate+Futures%3A+I.+INTRODUCTION&rft.isbn=02707314](http://zj5lm7ny2a.search.serialsolutions.com/?ctx_ver=Z39-88-2004&ctx_enc=info:ofi/enc:UTF-8&rft_id=info:sid/ProQ%3Aabiglobal&rft_val_fmt=info:ofi/fmt:kev:mtx:journal&rft.genre=unknown&rft.jtitle=The+Journal+of+Futures+Trading+and+Cash+Market+Volatility%3A+Stock+Index+and+Interest+Rate+Futures%3A+I.+INTRODUCTION&rft.au=Edwards%2C+Franklin+R&rft.aualast=Edwards&rft.aufirst=Franklin&rft.date=1988-08-01&rft.volume=8&rft.issue=4&rft.spage=421&rft.isbn=&rft.btitle=&rft.title=The+Journal+of+Futures+Trading+and+Cash+Market+Volatility%3A+Stock+Index+and+Interest+Rate+Futures%3A+I.+INTRODUCTION&rft.isbn=02707314)

### Abstract (summary)

There is a widespread belief today that uncertainty and financial risk are greater now than at any time since the turbulent 1920's. Financial risk,

and uncertainty is commonly associated with more volatile financial asset prices: stock prices, interest rates, and exchange rates. Recently, day-to-day movements in these prices have seemed too large to be realistically attributed to any objective new information. Large moves in stock prices, for example, have occurred only to be reversed in the hours immediately following. These episodes have instilled in investors a growing uncertainty about the future...

### Indexing (details)

Title	Futures Trading and Cash Market Volatility: Stock Index and Interest Rate Futures: I. INTRODUCTION
Author	Edwards, Franklin R
Publication title	The Journal of Futures Markets (1986-1998)
Volume	8
Issue	4
Pages	421
Number of pages	19

Publication year	1988
Publication date	Aug 1988
Year	1988
Publisher	Wiley Periodicals Inc
Place of publication	New York
Country of publication	United States
Journal subject	Business And Economics--Investments
ISSN	02707314
CODEN	JFMADT
Source type	Scholarly Journals
Language of publication	English; EN
Document type	statistics
ProQuest document ID	225478794
Document URL	<a href="http://search.proquest.com/docview/225478794?accountid=14753">http://search.proquest.com/docview/225478794?accountid=14753</a>
Copyright	Copyright Wiley Periodicals Inc. Aug 1988
Last updated	2011-10-12
Database	ProQuest Central

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## MIXTURES OF NORMAL DISTRIBUTIONS AND THE IMPLICATIONS FOR OPTION PRICING

Ritchey, Robert Joseph. The University of Arizona, 1981. 8202542.

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### Abstract (summary)

Numerous studies of the behavior of speculative prices have shown that the empirical distribution of such returns is consistently more peaked and fat-tailed than a Gaussian, and often positively skewed. Strong evidence is presented indicating that such returns are better modeled by two- and three-component normal mixtures. By varying the means, variances, and probability weights of the component normals, a wide variety of peaked, fat-tailed, and symmetric or skewed distributions may be represented with very tractable mathematical expressions.

Examination of the returns of 116 CBOE firms over three two-year periods indicates a high percentage of good fits for such normal mixtures, based on the chi-square statistic. Further, inspection of the parameters estimated for the two-component normal mixture reveals that the larger variance is quite frequently not associated with the lower probability weight as hypothesized by Mandelbrot and others. A new method of selecting class boundaries is proposed to improve the reliability of the chi-square goodness-of-fit test. Using simulation, this method is found to be superior to the traditional Mann-Wald equiprobable approach, particularly for low priced securities.

Using the assumption of risk neutrality and a mixture of normals density for the underlying security returns, the mixture call option pricing model is derived. Call option prices are shown to be weighted sums of Black-Scholes prices, with solutions to the mixture model converging to Black-Scholes prices, with solutions to the mixture model converging to Black-Scholes solutions as the number of periods to expiration becomes large. Using the parameters obtained from typical mixture densities of actual CBOE firms, mixture model prices are generated and compared with Black-Scholes prices. It is found that out of the money, near term options are underpriced by Black-Scholes relative to the mixture model. The closer to



expiration and the farther out of the money the option, the more Black-Scholes under-prices relative to the mixture model. Additionally, the latter tailed and more positively skewed the underlying security returns distribution, the greater the differences between the two call option pricing models.

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**Abstract (summary)**

The New York Stock Exchange is characterized as a black box with an input of orders and an output of executed prices. Feedback, or coupling between the output and input, is determined by the standard types of orders, and the time delay between the receipt of information on prices, the output, and the decision to enter an order as input. From this picture plus the knowledge that the distribution in time of orders has the characteristic of concentrated bursts, the price output is described by a random sequence of starting transients of the form  $A e^{t}$  with real, complex, or imaginary. It is quite essential to the description of the trading process to take account of its discrete, rather than continuous, nature in both price and time. The conclusions from the theory are in qualitative agreement with the "folklore" of stock trading.

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